This application is a continuation of U.S. Patent Application No. 08/918,196, filed August 25, 1997, now U.S. Patent No. 6,177,999 which is a continuation of U.S. Patent Application No. 08/459,342, filed June 2, 1995, now U.S. Patent No. 5,661,561. --

IN THE CLAIMS

Please cancel claim 1, without prejudice or disclaimer, and add new claims 2-20, as follows.

2. (New) An apparatus for measuring an object on a conveyor having a width, the apparatus comprising:

a chassis;

a mirrored wheel rotatably located on the chassis;

a light source positioned on the chassis and oriented to transmit a light beam in a fixed direction onto the mirrored wheel, wherein when the wheel rotates the light beam is reflected while also being sequentially redirected at one of a plurality of varying angles resulting in the motion of the light beam, which is reflected from the mirrored wheel, defining a path oriented generally perpendicularly to the light beam;

a reflecting surface located on the chassis and oriented to receive the light beam that is reflected off of the mirrored wheel and to redirect the light beam toward the conveyor such that the path defined by the light beam extends generally across the width of the conveyor;

a detector disposed on the chassis and having a field of view initially oriented toward the mirrored wheel, wherein the field of view is redirected via the mirrored wheel and the

reflecting surface to allow the detector to detect a reflection of the light beam off of one of the conveyor and the object at a plurality of locations as the light beam moves along the path across the conveyor.

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3. (New) The apparatus of claim 2 wherein the detector is fixed in an angularly offset position relative to the light source without the light beam departing from the field of view of the detector when the light beam reflects off of one of the conveyor and the object.

4. (New) The apparatus of claim 2 wherein the detector is a line scan camera that transmits a path-height-profile-measurement-signal which represents a height of the object, as measured at a plurality of locations along the path, relative to a conveyor surface.

5. (New) The apparatus of claim 4 further comprising a controller which receives the path-height-profile-measurement-signal as the object is transported across the path defined by a plurality of impact locations between the light beam and the conveyor surface.

6. (New) The apparatus of claim 5 wherein the path-height-profile-measurement-signal can be used to determine a height and a width of the object.

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7. (New) The apparatus of claim 5 wherein a plurality of the path-height-profile-measurement-signals can be used to determine a height, a width, and a length of the object.

8. (New) The apparatus of claim 4 wherein:

the line scan camera has a lens and detector array; and

the lens and detector array are mounted in a fixed angular relationship with respect to each other and an image plane along the path, wherein the fixed angular relationship results in the line scan camera having a focus over a depth of field of at least about three hundred (300) millimeters.

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9. (New) The apparatus of claim 8 wherein the depth of field is at least about nine hundred (900) millimeters.

10. (New) The apparatus of claim 2 wherein the detector is a position-sensitive detector that outputs a current representing a height of the object, relative to the conveyor, at the plurality of locations along the path.

11. (New) The apparatus of claim 10 further comprising a controller which receives the current from the position-sensitive detector as the object is transported across the path defined by a plurality of impact locations between the light beam and the conveyor.

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12. (New) The apparatus of claim 10 wherein:

the position-sensitive detector has a lens and detector array;

the lens and detector array are mounted in a fixed angular relationship with respect to each other and an image plane along the path, wherein the fixed angular relationship results in the position-sensitive detector having a focus over a depth of field of at least about three hundred (300) millimeters.

13. (New) The apparatus of claim 12 wherein the depth of field is at least about nine hundred (900) millimeters.

14. (New) The apparatus of claim 2 wherein the reflecting surface has a parabolic shape.

15. (New) The apparatus of claim 2 wherein the reflecting surface comprises a multi-faceted parabolic surface.

16. (New) A method of measuring an object on a conveyor, comprising:

emitting a single light beam in a fixed direction;

sequentially reflecting the light beam through a plurality of varying angles causing the motion of the reflected light beam to define a path generally perpendicular to the light beam, wherein the path extends generally across a width of the conveyor;

detecting the reflection of the reflected light beam off of one of the object and the conveyor at a plurality of locations along the path; and

determining a height profile, relative to the conveyor, along the path.

17. (New) The method of claim 16 wherein the step of sequentially reflecting the beam comprises reflecting the light beam such that the light beam repeatedly intercepts the object at an angle other than perpendicular from the conveyor surface.

18. (New) A method for determining the dimensions of one or more objects on a conveyor, comprising the steps of:

directing at least one light beam onto the conveyor at a plurality of locations along the path;

detecting reflections caused by the at least one light beam striking one of the conveyor and the object;

collecting time and location data associated with the detected reflections; and

generating a height-profile, relative to a conveyor surface, along the path.